**Cochlear Implantation After Surgical Removal of Intralabyrinthine Schwannomas: Techniques and Audiological Outcome**

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Intralabyrinthine schwannomas (ILS) are a rare differential diagnosis of sudden hearing loss and vertigo. In our own case series of 24 patients, 11 tumors showed an intracochlear, 3 an intravestibular, 3 an intravestibulocochlear, 3 a transmodiolar, 1 a transmodiolar with CPA, 1 a transotic with CPA, and 2 a multilocular location. Sixteen patients received surgery for tumor removal, 4 patients are scheduled for surgery, and 8 patients decided for a “wait-and-test-and-scan” strategy.

The 3 intravestibular tumors were removed via labyrinthectomy, and patients received a cochlear implant (CI) in a single-stage procedure. Nine intracochlear tumors were surgically removed via an extended cochleostomy with single-stage CI (x1), via partial or subtotal cochleoectomy and partial cochlear reconstruction with CI (x6), or implantation of an electrode dummy for follow-up with MRI and possible later CI (x2), orvia labyrinthectomy and partial cochleoectomy (x2). The transotic and the transmodiolar tumors were removed via a translabyrinthine approach to the internal auditory canal and the cerebellopontine angle.

For the intracochlear tumors, vestibular function could be at least partially preserved after surgery. In all but one case, hearing rehabilitation with CI was successful.

Surgical removal of ILS is recommended before tumor growth leads to a complete filling of the cochlea or before a transmodiolar or transmacular growth complicates surgical removal and prevents cochlear implantation. Radiotherapy of ILS may lead to destruction of the spiral ganglion cells, hindering hearing rehabilitation with CI. Sufficient data for radiotherapy, however, are not yet available. If done early enough, cochlear implantation after surgical removal of ILS is an option for auditory rehabilitation and an alternative to a “wait-and-test-and-scan“ strategy.

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